

## I CLAIM:

1. A position measuring device for determining the position of two elements, which are movable with respect to each other, comprising:  
5 a voltage source; and  
a scanning unit comprising:  
one or more individual electrical components; and  
a voltage monitoring unit that selectively supplies said one or  
more individual electrical components with a voltage from said voltage source.
- 10 2. The position measuring device of claim 1, further comprising:  
an evaluation unit; and  
an interface by which said scanning unit transmits data to said  
evaluation unit.
- 15 3. The position measuring device of claim 2, wherein said interface is a  
serial interface.
4. The position measuring device of claim 2, further comprising a  
graduation that moves relative to said scanning unit.
- 20 5. The position measuring device of claim 4, wherein said scanning unit  
further comprises a reading head that reads said graduation and generates position  
data that is sent to a position calculating unit that generates said data transmitted to  
said evaluation unit.

10005489-110801

6. The position measuring device of claim 5, wherein said reading head comprises a light source.

5 7. The position measuring device of claim 1, wherein said voltage monitoring unit monitors a supply voltage available to said one or more individual electrical components at a first time.

8. The position measuring device of claim 7, said scanning unit further  
10 comprising a load connected to said voltage monitoring unit, wherein said voltage monitoring unit connects said load to said scanning unit at a second time and said voltage monitoring unit monitors a second supply voltage available to said one or more individual electrical components and said load at said second time.

15 9. The position measuring device of claim 8, further comprising an evaluation unit; and

wherein said one or more electrical components comprises an interface by which said scanning unit transmits data to said evaluation unit.

20 10. The position measuring device of claim 8, further comprising an evaluation unit; and  
an interface by which said scanning unit transmits data to said evaluation unit, wherein said interface is not one of said one or more individual electrical components.

11. The position measuring device of claim 8, further comprising:  
a graduation that moves relative to said scanning unit;  
an evaluation unit that receives data from said scanning unit; and  
wherein said scanning unit further comprises a reading head that  
comprises a light source that is not one of said one or more individual electrical  
components, said reading head reads said graduation and generates position data that  
is sent to a position calculating unit that generates said data received by said  
evaluation unit.

5  
10

12. A method for the start-up of a position measuring device comprising a  
scanning unit, the method comprising:

switching on a position measuring device that comprises a scanning  
unit;

15

subsequent to said switching on, performing a check of a supply  
voltage of said scanning unit supplied by a voltage source; and

activating one or more electrical components in said scanning unit,  
provided a sufficient supply voltage for said activating has been determined during  
said performing said check.

20

13. The method of claim 12, wherein said performing said check  
comprises:

measuring a supply voltage of said scanning unit for a first time;  
providing a defined load with a voltage; and

calculating an internal resistance of said voltage source.

14. The method of claim 13, further comprising:

measuring a second supply voltage of said scanning unit at a second

5 time, wherein said calculating said internal resistance is based on said supply voltage  
of said scanning unit measured at said first time, said second supply voltage and a  
current consumption of said defined load.

15. The method of claim 14, further comprising calculating an available

10 supply voltage value from said calculated internal resistance of said voltage source  
and a current demand of said scanning unit during a position measuring operation  
performed by said scanning unit which would be available to said scanning unit after  
said activating said one or more electrical components.

16. The method of claim 15, further comprising issuing an error message if  
said calculated available supply voltage value lies below a threshold voltage needed  
for dependable operation of said scanning unit

17. The method of claim 16, further comprising taking into consideration  
20 effects, which let said supply voltage drop during said position measuring operation  
when selecting said threshold voltage

18. The method of claim 16, further comprising taking into consideration effects, which let said supply voltage drop during a service life of said position

measuring device when selecting said threshold voltage.

19. The method of claim 15, further comprising terminating initialization  
of said position measuring device if said calculated available supply voltage value lies  
5 below a threshold voltage needed for dependable operation of said scanning unit.

20. The method of claim 16, further comprising terminating initialization  
of said position measuring device if said calculated available supply voltage value lies  
below a threshold voltage needed for dependable operation of said scanning unit.

10

10005499-110801